THURSDAY, FEBRUARY 24, 1916.

THE OXFORD ARISTOTLE.

(1) *The Works of Aristotle.* Translated into English under the Editorship of W. D. Ross. *Magna Moralia, Ethica Eudemia,* and *De Virtutibus et Vitiis.* Unpaged. (Oxford: At the Clarendon Press, 1915.) Price 5*s.* net. Also: *De Mundo* and *De Spiritu.* (Oxford: At the Clarendon Press, 1915.) Price 2*s.* net.

(2) *Illustrations of Positivism.* By J. H. Bridges. New Edition. Pp. xiii+480. (London: Watts and Co., 1915.) Price 3*s.* 6*d.* net.

(1) THE thanks of all English-speaking students of philosophy and of the history of science are owing for the steady progress which is being made by the Oxford Press in the translation into English of the whole Aristotelian corpus. With regard to the works under review, the student of ethics who is not also a first-rate Greek scholar, owes a special debt of gratitude to Mr. J. Solomon and to Mr. St. George Stock: to the former for his very accurate version of the "Eudemian Ethics." As Mr. Solomon and Mr. Stock both point out, this work has generally been neglected by Aristotelian scholars. But this neglect is surely unreasonable. The "Eudemian Ethics" is at least a commentary on Aristotle's own "Ethics" by a personal pupil reputed to have been best acquainted with Aristotle's mind, and should therefore be authoritative for the understanding of the master's meaning.

Mr. Stock not only gives us an admirably clear and forcible translation of the "Magna Moralia," but he has also provided indexes and detailed tables of contents for this work and for the "Eudemian Ethics." Further, in a short but vigorously written introduction he discusses the whole question of the relations of all three moral treatises which go under the name of Aristotle one to another. As he says, the problem is not unlike that of the three Synoptic Gospels. "All three used once to be ascribed to the direct authorship of Aristotle with the same simpleheartedness, or the same absence of reflection, with which all three Gospels used to be ascribed to the Holy Ghost." A special form of the general question is the question whether the three books common to the "Nicomachean" and the "Eudemian Ethics" (E.N. v., vi., and vii., E.E., iv., v., and vi.) proceed directly from the writer of the former, assumed to be Aristotle, or from Eudemus, the writer of the latter. This question, Mr. Stock observes, is of no great importance, because in any case the doctrine is Aristotle's. The prejudice in favour of the former work is not peculiar to Oxford, where students are nurtured on the "Nicomachean Ethics," or to English or foreign universities, or to modern times, for Grant pointed out that whereas many Greek and Latin writers have written commentaries on the "Nicomachean," there has been no such commentary on the "Eudemian Ethics."

Mr. Stock dismisses somewhat summarily the contention of Prof. Burnet that the curious mathematics of the fifth book must be due to Aristotle, who was no mathematician, and not to Eudemus, who was one of the first mathematicians in an age in which mathematics made more progress than it ever did subsequently until the seventeenth century. Does not this contention reduce, Mr. Stock asks, to the bare statement that Eudemus wrote on mathematics? And have we any independent evidence that Aristotle was so poor a mathematician? The arguments which Mr. Stock marshals for deciding the authorship of the three disputed books are too detailed to be quoted here. His conclusion, arrived at mainly on linguistic grounds, is that the three books contain Aristotle's own doctrine, but that they were not written by him in the form in which we now have them. Part of them, at any rate, we have only as worked up by Eudemus and adjusted to the latter's own work.

Mr. E. S. Forster gives us an extremely spirited version of the "De Mundo," a work which is certainly unauthentic and probably based on two works of Poseidonius, the Μετεωρολογικὴ στοιχείωσις and the Περὶ κόσμου. Prof. J. Dobson is to be congratulated on the success with which he has grappled with the difficulties of the text of the "De Spiritu."

(2) In the second edition of the late J. H. Bridges's "Illustrations of Positivism," issued by the English Positivist Committee under the editorship of Mr. H. Gordon Jones, a number of papers (many of them were originally delivered as addresses or lectures) are included which were published posthumously in the *Positivist Review.* Mr. Jones has also classified all the papers according to their subject-matter, and supplied numerous bibliographical and explanatory footnotes, as well as an index. To the present-day reader some of these essays may seem to breathe the breath of bygone controversies. Others, on the contrary, as, for example, the brief account of Captain A. T. Mahan's book, "The Influence of Sea-Power upon History," will be read with special interest to-day. Whatever topic he wrote on, Bridges was never dull. He was possessed of an extraordinarily fine sense of historical perspective, and,

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accordingly, everything he wrote was informed with a magnanimity which makes these articles something more than mere journalism. Written as they mostly were for the *Positivist Review* by way of commentary on current literary and social events, their sanity and directness of presentation and their simplicity of style have done much in this country to win acceptance for Positivist doctrine.

E. H. STRANGE.

MECHANICS AND ENGINEERING TECHNOLOGY.

(1) *Mechanical Technology: being a treatise on the Materials and Preparatory Processes of the Mechanical Industries.* By Prof. G. F. Charnock. Pp. x+635. (London: Constable and Co., Ltd., 1915.) Price 7*s.* 6*d.* net.

(2) *The Theory of Machines.* By R. F. McKay. Pp. viii+440. (London: Edward Arnold, 1915.) Price 15*s.* net.

THERE is a peculiar fitness in bracketing the two above-mentioned books together, inasmuch as they represent almost entirely opposite views of the training of young engineers. By way of illustrating this it may be remarked that the second volume on inspection shows itself the product of an analytic mind, and deals on mathematical lines with the consideration of dynamical and statical forces and their results; thus this volume is one that would only indirectly appeal to the artisan or assistant works manager, and yet is one that should be thoroughly understood by the designer and chief draughtsman. The first volume is, as its heading suggests, a sound descriptive treatise of the most general processes and methods of dealing with raw materials, such as timber, iron, steel, alloys, etc., in order to fashion them into shapes of direct utility. There are in this volume some valuable tables of data obtained from the testing of materials, but there is no mathematics of any kind save a very elementary expression used on pages 6 and 7 in a paragraph on modulus of elasticity. The volume thus has only an indirect interest for the designer but is intensely interesting to the works manager's department, as it is wholly concerned with the properties of the materials used and the methods by which those materials are treated.

(1) This volume on mechanical technology is divided into five parts, the first of which deals with the physical properties of the raw materials: steel, iron, timber, stone, etc., and gives tables of strengths, weights, durabilities, etc. The second portion (150 pages) deals with the manufacture of mild steel, the copper alloys, wrought iron, with a short chapter on the heat treatment of steel. In the chapter on timber the various methods of preserving timber against decay are given, but it is noticeable that "yellow deal" is not given as being used for "street paving blocks." In London most of the streets are now being paved with soft deals, creosoted, and the harder Australian woods, karri and jarrah, are used by the side of the tramway routes. It is good to notice a chapter on oils and lubricants, in view of the immense service of the latter in machine shops and motor transport work. Large buyers of oils should always insist on the regular testing for viscosity and lubricating power, and the variation with rise or fall of temperature. A short chapter on indiarubber concludes this portion of the book. It could be wished that the author had included some details of the manufacture of mechanical rubber goods, such as tyres, etc., seeing that rubber plays such an important part in modern industry. It would be interesting at the moment of writing to know the progress made in Germany in the synthetic production of rubber for mechanical purposes.

Part ii. consists of 170 pages, and is devoted to modern foundry equipment and methods of moulding. This portion of the treatise should be very valuable to engineering students, and it has the merit of many excellent illustrations. Here, again, the reader cannot help regretting that German manufacturers should be able to turn out steel castings which in so many cases are better in quality and finish, together with cheapness, than is the case with us. It is indeed to be hoped that more scientific control of temperatures and mixings will bring back to us preeminence in all classes of foundry work. Part iii. devotes 150 pages to "The Smithy and Modern Forging." The book concludes with some chapters on wire drawing and wire-drawing machinery, and the manufacture of weldless tubes. A list of books of reference which give an extended treatment of the various portions of this treatise, together with a full index at the end, is a pleasing feature. As can be seen from this survey, the book is a very helpful source of information to a student whilst at college, and should be heartily recommended to such a one before he enters the shops.

(2) The education of the mechanical engineer at college is to a very large extent concerned with the teaching of mathematics and its application to engineering design, hence the student spends a relatively large amount of time in the drawing office and lecture rooms, and all too little in the workshop and engineering laboratory. Probably every good teacher would like to give courses of lectures on mechanical technology, but the time at his disposal is all too short, hence this part of the student's knowledge is left for him to pick up

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